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PROJECT LITERACY, CODING UNIT 1966. A COGNITIVE APPROACH TO READING READINESS--CODING GAMES.

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A NEW CURRICULUM OF CODING GAMES WAS DEVELOPED FOR BEGINNING READERS. THE CURRICULUM'S CONTENT EMPHASIZED TEACHING THE CHILD TO DECODE LETTERS INTO SOUNDS THAT REPRESENT LANGUAGE. THE PURPOSE WAS TO SHOW THE CHILD THE REASONABLENESS OF THE RELATIONSHIP BETWEEN WRITING AND SPEECH. THE CODING GAMES BEGAN WITH AN EMPHASIS ON LANGUAGE AND THE VARIOUS CODES THAT CAN BE USED TO STAND FOR LANGUAGE. PICTURES AND PICTURE-SYMBOLS WERE USED TO INTRODUCE WRITTEN CODES. THE GAMES WERE COMPLETED WITH AN INTRODUCTION TO THE USE OF ALPHABETIC CODE (TO SUPPLEMENT ABILITY TO COMMUNICATE WITH SIMPLE WRITTEN SYMBOLS). THE CURRICULUM WAS TRIED OUT IN TWO KINDERGARTEN CLASSES. THE RESULTS ACHIEVED BY USE OF THIS CURRICULUM WERE EVALUATED BY INTERVIEWS WITH INDIVIDUAL CHILDREN. ALTHOUGH ONLY ONE CHILD KNEW A LETTER STANDS FOR A SOUND, THE CHILDREN UNDERSTOOD THAT CODES STAND FOR LANGUAGE AND COULD HANDLE CODES EFFECTIVELY. FOLLOWUP RECOMMENDATIONS, AS WELL AS AN OUTLINE OF THE CURRICULUM ITSELF, WERE PRESENTED IN THE REPORT. THE CURRICULUM WAS DEVELOPED AS PART OF "PROJECT LITERACY," A COMPREHENSIVE RESEARCH PROGRAM IN AREAS OF EDUCATION RELEVANT TO THE ACQUISITION OF READING AND WRITING SKILLS. (JH)

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PROJECT LITERACY

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CODING UNIT

1966

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A COGNITIVE APPROACH TO READING READINESS:

CODING GAMES

Introduction:

Do children understand that they can write what they say? And that others by looking at their writing can repeat what they said? In many reading programs the notion that writing is a code for speech and that letters are codes for sounds is never made explicit. The Coding Game Unit as an introduction to reading is an attempt to explain to the child that we communicate with symbols and give him a rationale for the choice of symbol.

In learning to read, the child will be taught to decode letters into sounds that represent language. In this curriculum unit, we try to show the child the reasonableness of the relationship between writing and speech. The unit begins with an emphasis on language and the various codes that can be used to stand for language. Pictures and picture-symbols are used to introduce the child to written codes. Once the child learns to communicate with written symbols, the efficiency and use of the alphabetic code is introduced.

Aside from the major purpose of the unit, there are some incidental benefits to the child. During these lessons, the child, probably for the first time, looks at language analytically. He has to think about ways of expressing ideas clearly, so that others can understand him. The sentence is used as an instructional unit, and sentence order must be considered by the child if he wants to have what he "writes" make sense. He is introduced to the left-right orientation used in reading English. In addition, the brief daily series of related lessons provides an introduction to the more

cognitively oriented routines of first grade.

The specific objectives of the unit are as follows:

1. There are different codes which can represent language. (gesture, sound, light, pictures, symbols, letters).

2. To be meaningful, the symbols used in a code must be presented in a specified order.

3. To be useful, the meaning of the code symbols must be agreed on beforehand.

4. The code, to be useful, must be appropriate to the particular situation in which it is to be used. Visibility, audibility, and permanence are factors.

5. The use of letters to represent sounds is the most efficient of the codes used to stand for language. One letter can stand for the same sound in many words.

Description of Classrooms:

In the spring of 1966 the coding unit was tried out in two kindergartens in the Ithaca Public School system, one class taught by a staff member, and one by the regular classroom teacher. The classes can be briefly described as follows:

1. The afternoon kindergarten consisted of 12 boys and 8 girls. The parents of most of the children are upper middle-class, many university connected. The children show evidence of having had an enriched home background. They were interested in school, were very articulate and were aware of the expectations of the teacher. The teacher maintained firm but kind discipline.

2. In the morning kindergarten there was a much larger group of children; 14 boys and 16 girls. The variability in their intellectual and social maturity was notable. While a few of the children had university

connected parents the majority could be classified as coming from lower middle and middle class homes. As a whole, the class had low attention for group oriented tasks (individual children were allowed to wander at will) and discipline was difficult to maintain. This class was taught by a Project Literacy staff member who had formerly been a reading specialist in the Ithaca schools.

Lessons in both groups were observed each day by two members of the Project Literacy staff.

The Coding Curriculum:

A copy of the coding unit was given to each teacher. The unit outlined each day's lesson with the concepts to be taught. The lessons usually followed the pattern of review, introduction of new material, activities, and summary of important points at the end.

Each teacher followed the lessons closely. Some changes were made in approach and sequence to meet the needs of the two groups. For example, pacing in the morning group needed to be high powered in order to maintain interest. In one instance, /Two lesson days were combined into one for the afternoon group, since additional work was not needed for this group.

The length of the lessons varied from 8 minutes to 20 minutes. The average time of 15 minutes seemed to be most appropriate, as kindergartners have short attention spans. When additional activities were planned, such as drawing pictures, or writing messages, the teacher conducted them at a later time in the day. In both groups, the curriculum was taught in 3½ weeks.

The children had opportunities to devise codes using different media and to use the appropriate codes to send messages to each other. Oral communication was emphasized throughout the lessons. The children enjoyed those lessons that involved them in some activity - either group, such as playing a coding game, or responding to questions, or individual, such as making their own coding pictures or sending their own messages.

Lessons were conducted with materials that were available in the classroom as standard equipment (drum, phonograph, crayons, pencils, paper, chalkboard.) Other materials were prepared by the observers and the research associate teaching in the moring classroom, (charts of trademarks, cattle brands, flannel board picture-symbol cut-outs, photographs of the children, written messages using children's trademarks and other picture symbols.) A list of all equipment used is in the appendix of this report.

In the afternoon class, the coding unit was begun the last week of April and continued for 3½ weeks. The lessons in the morning group were begun two weeks later, the second week of May. There was a week's interruption (between day 7 and 8) due to illness. The unit also took 3½ weeks to complete (not including the interrupted time).

By beginning the unit in one room earlier, we were able to make certain revisions in the curriculum and try them out in the second room. These revisions were made, as well as additional revisions which we decided were needed after teaching the unit for the second time. For example, we found that use of slides to show cave drawings created many problems in the classroom. First, the rooms could not be made dark enough. Second, it was difficult to maintain control of the group while discussing the slides.

In the afternoon group, we had tried tape recording a script to accompany the slides. We discovered the presentation was too long, and did not allow the children to react to the slides as they saw them. By the time the presentation was over, the children had lost interest in the lesson. Teacher explanation of the slides worked better. (Conversely, children a year older reacted well to the taped presentation.) For these reasons, we have revised this lesson and will try using pictures of cave darwings next time.

We found that some of the concepts to be taught, and the means to teach them, were not made explicit enough for the teacher. An attempt was made to rectify this, with the use of more carefully prepared review and summary statements. The amount of review must also be adjusted to coincide with the needs of the group. The morning kindergartners enjoyed the review activities - they were eager to demonstrate what they had learned the day before. Opportunities to engage in familiar activities seemed to be worthwhile for these children. On the other hand, the afternoon children were eager for new, challenging material, and were bored by review of concepts they were familiar with.

During the second teaching of the unit, we revised the unit to include more message sending type activities. Use of children's symbols and familiar picture-symbols plus the abstract symbols used in previous lessons maintained high interest in the group. It also enabled us to use the sentence as the message unit. The teacher sent each child in the class his own message. In return, at least half the class sent messages to the teacher, their friends, and their families. We recognize the need

for similar type activities throughout the unit. The more children are able to use and expand work presented in lessons, the more likely they will retain the concepts taught for future use.

In teaching the lesson which used a simplified version of an Indian code for trading, we noticed that the morning children had trouble handling the complicated sentence structure as it was represented in the trade code. Instead of saying, I have a teepee that I'll trade for a canoe, these children were much more comfortable saying I'll trade a teepee for a canoe. The way in which the picture symbols were arranged, made only the first sentence the correct one. It is recommended that a similar kind of activity which could be described by a simple sentence (subject, verb, object) be devised to replace that of the trading activity.

In both classrooms, the lessons on the nature of the alphabetic code were not as effective as the preceding lesson. We need to look closely at this most important section. We tried to clarify the difference between the codes which stand for language (a sentence, phrase or word) and a code which stands for the individual sounds in words. Additional activities are needed which introduce the alphabetic code followed by training in auditory and visual discrimination. We foresee several weeks work being added to the curriculum as it is written now.

A copy of the coding unit is attached to this report.

Evaluation:

In each room reactions of children were sampled by individual testing. The method of sampling and question items varied somewhat for each class. The questions used with each group are in the appendix. Observers for both groups conducted the testing which consisted of questions and

performance items. Each interview took approximately five minutes and the responses of each child were tape recorded.

The Afternoon Group:

In the afternoon group, 10 children (half the class) were tested. They represented the top, middle and low scorers on the Metropolitan Reading Readiness tests administered in April.

In response to questions about making up codes, six (60%) recalled all of the codes covered in the unit. The remaining four children recalled at least two of the four types of codes. Most of these children showed evidence of acquiring a new vocabulary, using terms such as "code", "gesture", "motion", "circular code with the flashlight", in answering this question.

The next question concerned the permanence of the codes. Less than half, (40%) of the test group answered this question correctly. It is felt that the response to this question was not a good indication of what the children had learned. We are inclined to believe that the wording of the question determined, in part, the high number of incorrect responses.

To determine if children understood the notion of order, they were asked to put a series of pictures together to tell a story. (The morning group performed a similar task: to order pictures and code symbols to stand for a given sentence). The task was completed correctly by 90% of the test group.

Most of the group recognized the arbitrariness of codes. They could verbalize the need for agreement on the meaning of the code symbols. If they didn't know the code, these children realized that they would have to find out the meaning of the code symbols before decoding the message.

90% of the children recognized the picture of the Apis. Half of the group identified it as an animal. One of the group related the picture to the symbol A. Most children (80%) identified the letter A correctly. When asked what the letter A stood for, only one child responded with "sound". Most of the other responses indicated that this concept was not clear - i.e. they said letter A stood for their name. (A number of the children used initials to stand for their names during the coding unit activities. The lessons for the last two days did not clarify the concept that letters stood for sounds in words.)

The daily evaluations of pupil performance by the observer and the teacher agree with the specific testing results. The children in the afternoon group handled the gesture, sound, light and picture codes effectively. They knew what a code was. The notion that codes can stand for language was emphasized throughout the unit. The group had no trouble with the notion of arbitrariness. They recognized the need to talk things over first and to find out what the code symbols stood for, before they tried to decode a message.

Interest in the unit activities varied, but overall attention for the lessons was good. Interest was highest when the activity involved the children - they enjoyed "figuring out" new codes, making up their own codes, and writing down code messages, such as trades, and how they felt. They were very interested in reading-type activities - and gave their full attention to the lesson on brands and trademarks. Some of the children were able to figure out the meaning for the various cattle brands.

This group also enjoyed using the coding vocabulary. They carried notions learned in the coding unit over to other activities during the day, (i.e. "I used a gesture last night.") The children related their own experiences and other pertinent information to the class discussions, (i.e. "The Indians also drew pictures to send messages.") This group of children were verbally oriented. Experience with the unit activites broadened their (already extensive) vocabularies.

The Morning Group:

Of the 30 children in the morning group, 15 were interviewed by the observer. Since some changes were made in the curriculum for the morning group, the wording of the questions varies slightly from that used with the afternoon kindergarten.

Approximately 80% of the children tested mentioned gestures and sound codes as alternatives to talking. 50% mentioned writing. The majority understood that there are codes that stand for language.

13 of the 15 children said that when the person to whom they wish to send a message is absent they would communicate by letters or pictures. They seemed to understand the permanence of the written code. However, when asked if they could use a drum or a flashlight in the same situation, almost half of the children said, "yes." The interviewer felt that the children thought they wrre expected to say "yes" to this latter question.

Almost 80% were able to form a sentence using picture-symbols. (We had emphasized this activity in the classroom, and the children also spontaneously sent messages to others during free time.) While there were

some right-left reversals of the symbol sequence, th se were all read correctly, demonstrating that the children were able to use the concept of order. This was further tested when it was found that 60% could read a "silly" message. The children produced the words for which the symbols stood in the correct order though the message made no sense.

These kindergartners didn't respond well to the question on arbitrariness. The wording of the question may not have adequately tested their understanding.

No one was able to answer the question: What does a letter stand for? As has been stated, this is probably due to deficiencies in the curriculum.

The children in the morning group responded enthusiastically to this unit, often applauding the visiting teacher. With a few exceptions their eagerness and readiness to learn was obvious. The data from the interviews affirms our general impressions. Lessons where the objectives of the lesson were clear, when there was no confusion in the use of terms and when the activity in the lesson was directly related to the objective (not a frill) were by far the most effective. The most obvious weakness of the unit was in the teaching of the last concept: letters stand for sounds (similar results were noted for the afternoon group).

In contrast to the afternoon group, these children preferred "to do" rather than "to discuss." They performed readily using the various codes (gesture, sound, light). As was noted earlier, they particularly enjoyed using the picture code to send messages.

Summaries at the end of the lesson had to be carefully structured

with questions that we hoped would promote discussion. In most cases the children answered yes or no. Only a few children could generalize the concepts. In most cases, the concepts were then summarized by the teacher.

We did not notice children using the coding vocabulary as reported in the afternoon group. The regular teacher, however, used the terms code, signal, symbol as often as she could. We feel this point of comparison between the two groups is a very interesting one, and ought to be examined more closely in future work.

For both morning and afternoon groups the coding unit was scheduled each day after a Show and Tell period. After sitting approximately 15 minutes (or more) for Show and Tell, an additional 15 minutes spent with the coding activities had exhausted the children's capacity to attend. Free play time followed the unit work and this was a very desirable activity. When possible, however, the teacher of the morning group scheduled the coding work first, just after attendance had been completed. The observer and the Project Literacy staff member teaching the unit noticed a marked difference in the children's behavior. They were alert and able to attend to the coding activities for a longer period of time than they usually did. The children were "fresh" and this seemed to be the perfect time for cognitive-type activities.

Recommendations:

1. We need to consider how we can best teach children the notion of alphabetic coding. Do we need to expand the activities already revised in the curriculum unit? What other additions would be feasible? (i.e., work on the Morse code for an advanced group)

2. Children in the morning group had had some work with letters (upper case). Their ability to identify the letters varied. It was felt that a unit on auditory and visual discrimination of letters following the coding unit would have been appropriate for this group. Should we devise such a unit?

3. As taught, the coding unit fit very well into the kindergarten curriculum. We recommend it be tried out next year in kindergarten again. However, we would recommend having a more flexible schedule in order to meet the needs of a particular class. For example, we would have preferred to shorten the time spent on each lesson and lengthen the total time for the unit (4 to 6 weeks) for the morning group.

4. For a kindergarten group, we recommend that the unit be scheduled at a time when the children's attention is apt to be highest, (i.e., as soon as the session begins and when outside interruptions are least likely to occur).

5. If the unit is used in first grade several changes are recommended: First, shorten the amount of time spent on gesture, light and sound codes. Second, expand the time spent on written codes with the major amount of time spent on the alphabetic code.

6. Opportunities for extending the unit activities and relating them to other classroom activities should be considered. (i.e., games, art, and other pre-reading activities)

7. The children in the afternoon group acquired a new vocabulary. They could verbalize their newly learned coding concepts. They seemed to enjoy their newly acquired vocabulary. On the other hand, the children in the morning group were more apt to repeat activities introduced in the unit during their free time. It is recommended we look further into these differences between the two groups.

Day	Concept	Activities
1	Stands for	Gestures - whole class and individual activities.
2	Review stands for	Review previous gestures. Teacher puts several gestures together
	Order	(order becomes important) Children follow message of gestures.
3	Appropriateness of code	Class decides on new meaning for light signal.
4		Teacher reviews stand for. Teacher introduces word "code."
	Appropriateness of code medium	Children listen to Indian Drum record - sound code.
5	Different codes can stand for language	Children review ways of giving message. Children show ways for saying <u>yes</u>, <u>no</u> (gesture).
	Can have different codes for same language.	Children devise new light and sound codes for same message (yes, no).
6	Review stands for	Children review previous codes. Children go from gestures, lights, and sound language and/or language gesture, sound code, and lights.
	Appropriateness of code	Children decide which code medium can be used under restricted circumstances.
7	Language can be coded by written messages	Teacher gives examples of usefulness of written messages.
		Teacher introduces picture symbols. Children use to code own messages.

Day	Concept	Activities
8	Permanence of written code.	Children look at yesterday's picture codes to remember how they felt.
	History of picture writing, permanence of drawings	Teacher shows pictures of cave drawings.
	Pictures can stand for words in a story	Children draw pictures to stand for telling about what they do before they come to school.
9	Need for agreement on code	Teacher and children look at a few previous day's pictures - discuss order and ease of reading code.
	Order for code	Use of picture code symbols in special order.
10	Picture-symbol code agree on meaning and order	Teacher shows Indian trading picture. Children code own trades with pictures.
11	Permanence of written code	Recall previous days trades - emphasize had to know <u>order</u>, and agree on what pictures <u>meant</u>.
	Distinction between picture writing and symbols	Compare difference between pictures and symbols Children devise symbols for <u>man</u> and <u>house</u>.
12	Written symbols can stand for language	Teacher reviews symbols for man, house, and $\longrightarrow$. Children use symbols for messages.
13	Different kinds of written symbols stand for language.	Teacher introduces trademarks, brands, and signs. Each child makes a symbol or picture to stand for his name.

Day	Concept	Activities
14	Written symbols can stand for names. Use code to send messages.	Children read messages teacher has written on flashcards and follow messages.
15	History of alphabet	Pictures of the progression from pictures which stood for words to letters which stood for sounds.
16 & 17	Review history of writing Efficiency of alphabetic code.	Compare efficiency of picture symbols for names. Begin with children who have same or similar names.
18 & 19	Summary	Ciildren demonstrate gesture, light, sound codes. Children read written codes that teacher puts on board. Compare all ways of saying yes-no without "talking" (gesture, light, sound, write <u>yes</u>, <u>no</u>)

DAY 1

Concepts	Teacher-Pupil Activities
Gestures can stand for language	1. Teacher Introduction: "Can you tell me what this means?" (T. puts finger to lips) elicits - be quiet. "I could have said be quiet. This (T. does gesture) stands for saying something. I can say be quiet or do this."
	2. Children demonstrate gestures which stand for the words, yes, no. (T. emphasizes, you can tell somebody yes or no, without talking out loud.)
	T. plays yes-no game with children. T. asks questions and they answer her with the appropriate gesture:
	examples:
	Are you in kindergarten?
	Is it raining today?
	Are you in school?
	3. Children demonstrate other gestures which stand for language. (T. may need to give specific suggestions to the child doing the gesture for the group.) One child demonstrates gesture, rest of class tries to guess what the child is trying to tell them- what words the gesture stands for.
	Palm toward you, finger motion - "Come here."
	Palm out, hand moving away - "Go back."
	Lift hands, palm up - "Stand up."
	Lower hands, palm down - "Sit down."
	Raise hand - "I want to speak."
	Finger to lips - "Be quiet."
	4. Summary of major points:
	T. "How can we tell someone something without talking out loud?" (encourage summary from children) Quick review at end - T. gives language and all children do gestures.
	examples:
	"When you want to speak to the class what do you do first?"(raise hand).
	"How can you tell the class to stand up for the flag salute without talking out loud?" (show gesture for stand up)
	T. to emphasize:
	Gestures stand for language. These hand signals stand for saying something.

DAY 2

Concepts	Teacher-Pupil Activities
Gestures stand for language	1. Review: T. quickly reviews gestures from Day 1. (Vary procedure: gesture ⟶ language language ⟶ gesture)

Example:

(T. puts finger to lips), "What words does this stand for?"	Class says "be Quiet"
T. asks, "How can you tell someone to stand up (and sit down) without talking?"	Class demonstrates gestures.

T. summarizes review: "Why is it good to have more than one way to tell something?" (Can't always hear, so use a signal that we can see, etc.)

2. T. Introduction: "Today let's decide on special ways to tell the class to do things. We can send messages without talking out loud."

T. has children make up gestures to stand for:

Close your eyes.
Fold your hands.
Go to the circle (to your seats).

(Have the children decide on gestures that are not the action they want to be done. i.e., hold up two fingers to stand for "Close your eyes.")

Children demonstrate gestures and class follows directions.

Order

3. Teacher puts two gestures together:

1. Go to the circle and 2. Close your eyes.	Class follows the directions.
1. Close your eyes and 2. Go to the circle.	T. asks, "Can you do this?" "Why not?"

"If I want to tell you to do two things, can I tell you to close your eyes first? Why not?"

4. Summary: We can tell someone to do more than one thing, without talking out loud.

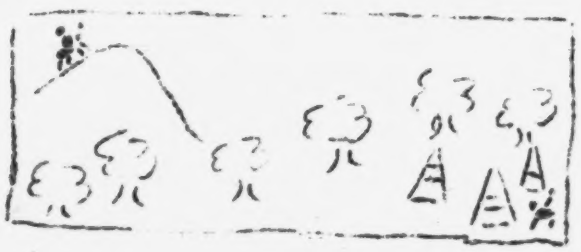
DAY 3

Concepts	Teacher-Pupil Activities
Order	1. Review: T. "Can we use hand signals to tell someone to go to the circle and sit down?" (yes) - T. or child does gestures; another child follows the directions. "If I do this, (T. changes order of the gestures) does it mean the same thing - go to the circle and sit down?" (no). "Is that a silly message? Why?" T. emphasizes: When you tell someone to do something, you must decide what you want him to do first, and do that gesture first, so he will know what to do first, second, etc.
	2. T. Introduction: "Here is another way to tell the class to do something without talking out loud." (T. turns off light). "What words does this stand for?" (In most rooms, this usually means be quiet or go to your seats.)
Arbitrariness of codes - need to agree what the code stands for.	"Today we are going to use a light signal to send another message to someone." (T. sends child out of the room and the class decides and agrees on a special light code. ex. one flash = go to the circle, or go to the piano.) Child returns and tries to guess what the light signal stands for. Then the class demonstrates the meaning of the light signal. "one flash stands for the words go to the circle."
	3. Summary: "We can have a light signal or hand signal stand for saying something, if we decide together what it means." "Will somebody from another class know what to do when we turn the lights off?" (no) "Why not?" (doesn't know what we agreed it would mean.)

DAY 4

Concepts	Teacher-Pupil Activities
Arbitrariness of light code	1. Review: (very short) Use child who was absent day before, or child from another room. T. uses flashlight to "tell" child to do something. T. points out that if don't know what the code stands for you can't know what to do.
Meaning of code	"When we know what a light or a hand movement means, we have a code. A code uses one thing to stand for another. We're making up codes to stand for talking." (T. gestures: "This stands for my saying sit down.")
Sound codes	2. T. Introduction: "Today we're going to learn about a different kind of code. It's a code that a little Indian boy learned to use."
	T. plays Little Indian Drum record. (approx. 6 minutes)
	After listening to record, T. asks children:**
	1. Why didn't Red Fox call to his father? Why didn't he say, "come here"?
Appropriateness	2. Why didn't Red Fox send his message with a light?
	3. Why didn't Red Fox use his hands, as we have been doing to send the message?
	4. Why was the sound code a good way to tell his father he needed help?
	5. What words did the drum beats stand for? (T. can help children remember by giving them some clues - i.e., When Red Fox was in danger he said...)
	3. Summary: We can make up a sound code to stand for talking. If we all learn the code, we can send messages to each other.

** Note: It is suggested that hee teacher make a very simple sketch of the mountain, the forest, and the teepees - to help the children remember the story on the record, and to help them visualize the fact that Red Fox was far away and hidden from his father's view.



Teacher draws on chalkboard.

Additional Game for Later in the Day

Play a version of hide-and-seek. One child is Red Fox, another is his father. Both have drums. Red Fox hides; Father taps sound code - "Where is Red Fox?" Red Fox answers with the drum "I am here." Repeat drum beat messages until Red Fox is found. Several children have turns.

DAY 5

Concepts	Teacher-Pupil Activities
Different codes can stand for language	1. Review: "How many different ways do we know how to send a message without talking?" T. has children use flashlight, drum, and gestures to send messages to the group. After each code is demonstrated, T. asks children: "what words did that stand for?"
Arbitrariness of code. Different codes can stand for same language	2. T. Introduction: "Today let's make up a light code to stand for the words, yes and no." Individual children use flashlights and answer teacher's and other children's questions, with yes, no. (Note: We found that by darkening the room, the children could see the light signals more clearly.) "Let's also make up a sonnd code to stand for the words yes, no." Some children use drum, rest of class can clap the appropriate number of beats for yes and no. T. plays yes-no game again; asks a few questions, and children answer using the new sound code they've agreed on.
	3. Summary: 1. We can make up several codes to stand for the words yes, no. We can say yes this way (light) or this way (sound). 2. If we know what the code is. we can understand you.
Appropriateness	3. Why is it good to have more than one way of saying something? If I canthear you, what code can you use? (light and gesture)

DAY 6

Concepts	Teacher-Pupil Activities
Use codes to stand for language	1. Review: (May want to omit review for advanced group) T. has child use light code for "go to the circle."
	T. demonstrates light code for "yes", "no" - asks what words each signal stands for.
	T. taps sound code for "yes", "no" etc.
	Three children use gestures to send messages. Class tells what words they stand for.
Appropriateness of code	2. T. Introduction: "Today we are going to use our codes for yes and no to play a special game."
	T. sends child behind bookcase or into cloakroom (where child can't see person sending message.) Child who is IT, calls out "Can I come out now?" Another child signals "yes."
	1. Try to use your hands. Does that work?
	2. Try the light. Does that work?
	3. Try the drum. Does that work?
	(X comes back)
	Another child is chosen as IT. IT asks question... this time person who is signalling with sound code has choice of saying yes or no. If answer is no, IT has to repeat question. etc., until answer is yes.
	3. Summary:
	If a person can see you, can you send a message with lights? with your hands? What if he cannot see you? What can you do if he can hear you?
	When you send a message, you need to figure out a way to send it so that the person will get the message.

DAY 7

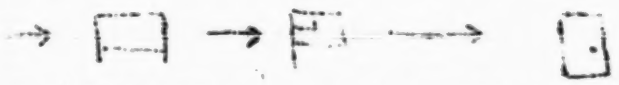
Concepts	Teacher-Pupil Activities
Appropriateness of written code	1. Review: "Yesterday we talked about the best kinds of codes to use when we want to tell someone something. " If person can't see you, what code will you use? If person can't hear you, what code will you use? If person can't see you or hear you what kind of code will you use? (Introduce written codes)
Picture-symbols can stand for language	2. "Someone sent this to me. How did they tell me Happy Birthday?" T. shows children telegrams, cards. Asks children if they have ever been told something by written code - i.e., Happy Birthday. 3. Can drawing a picture stand for something we want to say? (yes) T. uses chalkboard: Draws pictures: ☺ ☹ "What does this mean? What does this stand for? " Accept I'm happy, I'm sad. (Mention that this is a picture of a smile or a frown.) Several chidren come to the board and use symbols to tell how they would feel if: (T. gives instances) "you got a new toy today" "you fell and hurt your hand" etc. Children to use picture code (all have paper and pencils) to tell how they feel right now; or how they felt when they got up in the morning - (T. to choose only one instance for them to think about.) "Instead of telling me, you're going to use a picture code that will stand for the words, I'm happy or I'm sad." **
Agreement	4. Summary: If we decide together, we can use a special kind of picture to stand for something we want to say.

** Note: Be sure children's names are at the top of paper before they begin making the picture-symbols, as ◠ becomes ◡ when turned upside down.

DAY 8

Concepts	Teacher-Pupil Activities
Permanence of written code	1. Review: "Yesterday we made pictures to code how we felt. How many think John felt sad? How can we know for sure?" T. takes out pictures and displays John's to group. T. and children look at a few of the pictures. (If a child used a different symbol or if he made a full picture of himself, compare it with the agreed upon symbols.) Summary of Review: "By writing the code yesterday, we can look today and remember how we felt. If John weren't here could I still read his code?"
Beginnings of picture writing	2. T. Introduction: "Today let's look at pictures that people made a long time ago." Children to look at cave drawings displayed on bulletin board. (Use pictures that can be recognized by children as well as one or two cave drawings that have some symbolic representations.) Points to be made: 1. Cave drawing are first record of something written. 2. People drew pictures to stand for things that they wanted to say. 3. We know about the kinds of animals that lived a long time ago, as well as how the people lived - what they did, because of these cave drawings. 4. If we find out what these (abstract symbols) stand for we'll know what the picture is about.
Uee pictures to stand for words in a story - have a picture code.	3. Children draw pictures that tell about all the things they do before they come to school. "Put everything in your picture you would say if you were telling us about what you do before you come to school." (T. identify each child's picture - quick check with child to find out what picture is about) 4. Summary: Pictures can be a code. They can stand for words in a story.

DAY 9

Concepts	Teacher-Pupil Activities
Picture code for language	1. Review: "Can we use pictures to stand for saying something?" Look at children's pictures; children try to tell about a picture and child who drew picture verifies.
Need to agree on code you use	T. "Sometimes it is hard to be sure what a picture means. Do we we know what this means?" T. draws ☺ "Why?" (we agreed that it would stand for I'm happy.)
Order for writing code	2. T. introduces notion of order in codes: (Pictures were good, but hard to figure out what someone did first, next, last.) We can tell each other things in a better way. T. "I'm going to write a message to you in a special way. This arrow ⟶ stands for the words go to. Do you know what to do first, next, and last?" T. uses felt board and simple pictures, and the → ; Go to the chalkboard, go to the flag, go to the door. Child comes up and reads message. (T. shows him where to start reading) Another child follows message. T. changes order of the message, has it followed and then read to the class. (do several times)
	3. Summary:
Order of code (symbols ordered same way as words in sentence)	When you tell someone to do something, you must decide what you want him to do first. Then, what do you put first in the message you write? What do you put next? What do you put last? ("The order that the written code is in should be in the same order as the things you want done.")
Agreement of code	When I use this (⟶) in a message, will you know what it stands for? Why? (we ageeed on meaning) Can you use (⟿) to send messages to someone?

DAY 10

Concepts	Teacher-Pupil Activities
Picture-symbol code	1. <u>Review</u>: T. puts message on board → [door] → [go to] → [house] Child reads it. "Which of these is not a picture? It is a symbol that stands for ... <u>go to</u>." T. changes order of → [door] to [door] → [go to]. Ask: "what does that say now? (door go to) Is that the way we say it? <u>no</u> If we change the order, does it make sense?" (no, it's silly)
	2. <u>T. Introduction</u>: "Today I'm going to show you a message that an Indian sent in code." T. shows picture; children try to guess code. T. "The X in the middle means 'to trade'. This picture tells what he wanted to give. This picture tells what he wanted to get in return." "I have a skin that I'll trade for a teepee." (point to picture and stress order) Children use trading symbol, and pictures of toys to play trading game. Individual children come to the flannel board, pretend they have a ball; decide on a trade; use the picture symbol code to write their message. After several have turns, T. reverses order of one of the trades, asks if it makes a difference.. (yes).." what does the message say now? " (children read new trade sentence.)
	3. At seats (may be later in the day or next day.) Children have ditto. "Pretend you have a ball; make a picture of what you'll trade it for. <u>How</u> will you show that you want to make a trade? " (put symbol of trade, the X <u>in the middle</u>.)
Differentiation between symbols and pictures Order	4. <u>Summary</u>: Look at trade pictures: Which is a picture; which is a symbol (not a picture)? What did we agree the X would stand for? (to trade? Do we have a special way of making our trading messages? (yes - must use certain order and special symbol for trade).

DAY 11

(May begin with continuation of Day 10, Parts 3 and 4)

Concepts	Teacher-Pupil Activities
Permanence of written code	1. T. Introduction: Asks "What did you want to trade? How can we be sure that was what you wanted?" (look at the drawings)
Order	T. and children look at trade pictures. Children read messages; T. emphasizes written order. ("We have to agree on the order to write a message, so that all of us can understand what you want to tell us.")
	2. T. review: "Look at the trading message. Which was not a picture?" (the X, it stands for the words, to trade.)
	"Look at this message: (go to the chalkboard, etc.) Which was not a picture?" (the → , it stands for the words, go to.)
	3. "Today we are going to make up new symbols to stand for the words, 'man' and 'house'." (Emphasize we want something easy to draw, and something we can remember.) T. can suggest use of a stick figure for man i.e., circle for head, lines for body, arms and legs.
	"Can you make that symbol?" Children have paper and pencil - all make same symbol agreed on.
	Suggested symbol for house - (easy to make, can remember it, if you think of the roof of a house) Children practice making symbol for house.
	4. Summary: T. holds up photos of house and man, (from a magazine, etc.) and drawings of the symbols for man and house.
Differentiation between picture and symbols	Which is the real picture of the house? Which is the symbol, we made to stand for 'house'?
	Which is the real picture of the man? Which is the symbol we made to stand for 'man'?
	What's different about the real picture and the picture symbol?

DAY 12

Concepts	Teacher-Pupil Activities
Pictures and symbols can stand for language	1. Review: Children identify symbols for house, man and go to. T. "Today we're going to use this symbol to stand for the words is going to."**
	2. Children use picture-symbols to compose messages. T. "Use these three symbols to stand for a message which says: The man is going to the house." After child arranges symbols, class reads the message.
Code must be written in certain order, if want it to make sense	T. changes order of symbols and children read: The house is going to the man. "What happens if I change the order of the symbols?" (get a silly message) "Is the order important?" (yes) T. has another child correct the order and read the message again.
	3. Children take turns making additional messages: (T. adds pictures for flag, door, chalkboard, to the flannel board display) "This stands for saying: The man is going to the chalkboard. The man is going to the door. The man is going to the flag."
Picture-symbol code	4. Summary: Can we use picture-symbols, and symbols to send messages. (yes) Why do we have to know what order to put things in? (If order not right, may not make sense.)
Order	T. rapidly reviews messages (on flash cards). Children take turns reading the cards and decide whether the sentence makes sense or if it is silly. ex. The man is going to the flag. The flag is going to the house. The man is going to the house. The house is going to the man.

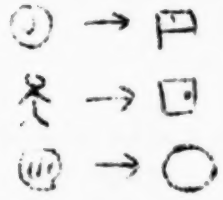
**Note: The symbol ⟶ has also been used to stand for go to. Children have no trouble switching meaning)

DAY 13

Concepts	Teacher-Pupil Activities
Many written symbols stand for language- brands trademarks signs	1. T. Introduction: T. shows children pictures of brands and trademarks and signs. Asks: "Do you know the name, or what this stands for?" ex. Red Cross + Volkswagon Bell Telephone Cheerios and other popular cereals Camel cigarette symbol United Nations symbol (for advanced group) Shell Oil Co. ex. of brands, people use to identify their cattle Running M Lazy B Diamond T Spur 2. T. "Use your pencils (or crayons) and draw your own trademarks. Make a symbol to stand for you, for your name. Make a picture or a special symbol that is quick and easy for you to make and remember."** Children draw their trademarks (on small sheets of paper approx. 3 X 3). T. labels on back for later identification. Each trademark is displayed next to a photo of child on bulletin board. 3. Summary: (later in the day during a quiet time - class is looking at bulletin board display) T. asks individual children what code symbol they used to stand for their name.

** Note: T. may need to help some children - can suggest abstract symbols such as circle or triangle, or initials of name, or a picture of something related to child's name, i.e., James Valentine = , Shelly T. =

DAY 14

Concepts	Teacher-Pupil Activities
Variety of written symbols to code names	1. <u>Review</u>: (Keep brief; vary procedure; children actively answering questions.) ex. 1. This (T. points to child's trademark) stands for _____. 2. Find Jamie's trademark. What did he use to stand for his name? 3. Find a trademark that uses letters. Who does it stand for?"
	2. <u>T. Introduction</u>: "Can we use these trademarks to send messages? How?" "Today, I wrote messages to you; can you read them? do you know what to do?" (T. holds up flash card with a message. Children read message. Child for whom message was goes and does action.)
	ex.  James go to the flag. Mike go to the door. Shelley go to the circle.
Order Agreement	3. <u>Summary</u>: Emphasize notions of order and agreement - necessary for understanding the code messages. After children have followed code messages ask: How did you know what to do? Would a child from another room know what these messages mean? Why not?
	<u>Additional activity</u>: Provide the class with flash card strips and encourage them to send messages to friends and to the teacher. T. can put <u>her trademark</u> on the board.

DAY 15

Concept	Teacher-Pupil Activities
Order	1. Review: Teacher shows children messages which the class made the day before (to themselves, other children and teacher). Children read messages; T. discusses correct ordering of symbols.
History of alphabet	2. Activity: Teacher displays pictures showing the progression of pictures to letters - the story of A and D. Teacher tells the children the story. (Script follows Day 15.)
	3. Summary: Emphasize
Picture code for language	People started with pictures to stand for saying something.
	These pictures became less like pictures as time went on.
Alphabetic code for sounds	Once people discovered that they could have a code to stand for the sounds in words, they used this code for writing.
	The letter code was much easier to use and remember.

Note: May want to omit A - since children remembered it as standing for "bull" and not Apis.

Mrs. Richards

Script to accompany picture-to-letter progression

Today you're going to see how pictures for words eventually became the letters of our alphabet. The Story of A The first writing seems to have been in pictures. Remember the cave drawings? But, gradually, little by little, these pictures got changed, until they weren't pictures at all, but word symbols, and finally they became symbols for sounds -- or what we call letters. All this took many thousands of years to happen and many different peoples used the symbols and each time they got changed a little bit.

11. Here is a picture of an ox or a bull. Some early people called this animal -- aleph. The Egyptians called him -- Apis. But whatever he was called in the different languages -- this picture stood for the animal.

12. Here you see the apis again and next to it you see how the picture got to look after a while. There are fewer lines and it's probably easier to draw. But you can still see the horns if you look for them.

13. After a long, long time as different people borrowed the writing, and used it for their own language, the Apis symbol got turned around. Now it's so simple anyone cnn draw it. But it's no longer a picture at all. Even the horns are gone. Now the symbol doesn't stand for an animal at all.

14. Once the idea for making a written code for sounds was thought of, people never went back to picture-symbol .

    Here you see what happened when a people -- the Greeks -- took that same old symbol and used it to stand for the sound A. This letter is beginning to look a lot like the one we use now. But it's still a little different.

15. The old Greek letter A (they called it Alpha) became our letter A. There's been very little change in the way letters have been written for a long time now.

16. Here's the letter A and here's the ox or bull. They're not much alike, are they? One stands for the animal and one stands for a sound. But remember, it has been at least 5000 years in happening.

The Story of D

21. What does this look like? This is a fancy door. It was called Daleth by the Egyptians. Whenever the Egyptians wanted to write the word Daleth, they drew this picture. Not everybody knew how to write just certain people and if you wanted to get something written you had to go to that person so they could do it for you.

22. Look at what's happened to the door. Do you see what has happened to it?

23. Notice how this symbol has changed. Now it's round on top.

24. And here's the rounded foor again. It doesn't look much like a door now. When symbols change like this, we don't always know why. Maybe it was an accident, maybe they didn't mean to change it, maybe their hand slipped, or maybe they were must a little sloppy. These two pictures show how a symbol can change. By this time people were using this symbol to stand for one sound.

25. In this picture the symbol has changed again. Now we can call it a letter because it stands for a sound. But it doesn't look like any letter we know yet, does it? This letter is all straight lines -- maybe that's because people began carving letters into stone and its easier to cut straight lines into stone.

26. And finally, the letter changed once more. It's a letter we see all the time and we call it D.

27. Now let's go back to the first picture we saw. So you remember that fancy door? Look at the difference. They're not much alike, are they? But thousands of years ago the beginnings of a writing system got started with pictures like this door.

DAY 16

Concepts	Teccher-Pupil Activities
Progression from pictures to letters	1. Review: T. holds up last pages from story of A and D. (each page contains the original picture and the final letter) Asks: For A: "Which is the picture: What did it stand for? (animal) Which is the letter? What is the name of the letter? What does the letter stand for?" (sound) For D: (same set of questions)
	2. T. Introduction: "Look at bulletin board that has your symbols." (photos of children have been removed). T. has children identify symbols (do most familiar ones first). Continue until several children have identified symbols incorrectly. "It's hard to remember a different symbol for each person. What if everyone in the school had a different symbol standing for his name, could you learn them all?"
Efficiency of alphabetic code	"There is a better way to write your names ... a way that all of us can read and remember." (If a child has used letters to write her name, take that name as an example first: "What did Susan use to stand for her name? Letters or pictures? Does someone else have a name that's like Susan's? (get Sandy, Sally,etc.) Do their picture symbols tell you that they are alike in some way? (no) If we use letters to stand for the sounds in their name, can we see that they begin alike?" (yes) Compare two children who have exactly the same name: "Did the two Bobby's use the same picture symbol? Could we tell their names were alike? (no) If we use letters, can we tell their names are alike?" (yes)
	3. Summary:
Alphabetic code to stand for sounds	What kind of code do we have now? letter code What do we use to stand for the sounds in words? letters

DAY 17

(18 or more)

Concepts	Teacher-Pupil Activiteis
Alphabetic code to stand for sounds in children's names	1. <u>Continue with Day 16 activities</u>: "Yesterday we were talking about the letter S. Is this an S? (T. puts picture of sun on board) Is this an S? (T. puts letter on board.) Sandy and Susan and Shelley used an S to start their names. What sound does the letter S stand for?" 2. Introduce another letter: ex. N "What is this? (elicit: letter - name of letter is N) If I want to write Ned's name, I start it with an N. Who else has that sound in his name?" (Children raise hands; T. has them come to board and write their names- Ned Nancy Andy Dan Children tell where they hear the n sound in their names, and they show where they write the n in their names.
Efficiency of letter code	3. Compare two names that are similar: ex. Nancy, Ned "How are Nancy's and Ned's names alike? (start same way) Look at their picture symbols. Do they show that their names start the same way? <u>Which is easier for you to remember, the symbol (or picture symbol) or the letters that stand for their name?</u>" Continue the activities similar to #3 and #4 until all the children's names have been considered. 4. <u>Summary</u>: When we write our names we use letters to stand for the sounds in our names. It's easier to remember what a few letters stand for, than to remember a different picture symbol for each name.

Materials for Coding Unit

Standard Classroom Equipment

- Phonograph
- Drum
- Chalkboard and chalk
- Paper, pencils and crayons

Materials Prepared for the Unit

- Letters, birthday cards, telegrams
- Pictures of cave drawings
- Picture of Indian code
- Display of trademarks, signs, and cattle brands
- Pictures, picture-symbols and symbols for use with flannel board
- Picture-code messages on flash cards
- Display of picture-to-letter progression for A and D
- Display of children's photos
- Dittos

Commercial Materials

- Flannel board
- Flashlights
- Little Indian Drum record

CODING OBSERVATION CHECKLIST

Observer: _____
Lesson: _____
Date: _____

Time: _____ to _____
Absentees: _____
_____
_____

REVIEW OF PREVIOUS WORK

1. Was there some review of previous lesson?
   a) a little b) adequate c) too much
2. Did review help make transition smooth?
   a) yes b) no
3. What was class response to this review?
   a) blank faces - did not remember
   b) A few remembered concept
   c) most remembered concept

Explain:

OVERALL INTEGRATION OF LESSON

1. Did elements of lesson fit together?
   a) all fit together, lesson flowed smoothly
   b) most elements integrated
   c) lesson was pretty awkward

Where were the awkward transitions?

PLACE OF LESSON IN SEQUENCE

1. Did lesson fit here in sequence of lessons?
   a) OK
   b) too early, children not prepared for it
   c) too late, point should have been made earlier

Explain:

FOLLOWING LESSON PLAN

1. Did teacher refer to notes for phrasing or order?
   a) No
   b) Some but did not interfere
   c) Some - interfered
   d) No- might have helped
2. Did teacher change lesson plan in any way?
   a) part(s) added
   b) part(s) omitted
   c) order of lesson changed
3. Did children add to or change lesson in any way?
   a) yes
   b) no

Comments:

List changes and evaluate:

List changes and evaluate:

TARGET CONCEPT

1. Did teacher seem to understand point of lesson and reflect this in her handling of lesson?
   a) No
   b) Somewhat
   c) Yes

2. Did children understand point of lesson?
   a) children understood concept stressed
   b) No - concept too difficult
   c) No - lesson didn't get concept across
   d) No way of knowing

3. List any part(s) of the lesson especially effective in getting a concept across.

4. Were any parts of the lesson superfluous?
   a) no - all parts valuable
   b) part(s) not necessary to curriculum.
   c) part(s) just overly redundant

5. How could lesson be improved?
   a) no improvement needed
   b) changes needed in existing activities
   c) another activity should be designed
   d) just more child activity needed
   e) more discussion and verbalization
   f) more of what was done, more repetition

6. What was your overall opinion of the lesson?

7. Any other comments or impressions?

Comments:

Explain:

Explain where and why:

List changes needed, points that need to be clarified, or any ideas

PARTICIPATION AND GENERAL REACTION

1. How many children took part in the lesson?
   What type of participation?

2. Did the children seem to enjoy the activities?
   a) most did b) about half did c) most didn't

3. Did the teacher seem to enjoy teaching this lesson?

4. Was there a loss of interest at any point?
   a) no b) yes-part of lesson too long
   c) yes - too much talking
   d) yes - lesson too difficult
   e) yes - poor lesson construction (see comments above)

Comments:

Questions for Individual Testing in Afternoon Group.

1. Have you ever made up a code?

2. What about the codes we made up in school? What codes were they? What did they stand for?

3. If you and I made up a code right now would Mrs. N. know what it was? Why?

4. In school we sent a lot of messages without talking, how can you tell someone something without talking?

5. What could you use if you wanted it to last for a long time? Which code would be best?

6. Here's a code we made up for something? Do you know what it stands for? How can you find out?

7. Here's a drawing you've seen before, what does it stand for?
(show picture of Apis)

8. Do you remember what this stands for?
(show letter A)

What does a letter stand for?

8. Here are three pictures, can you put them together so they will stand for something? First let me explain what they are.

Can you make them into a story?

Questions for Individual Testing in Morning Group.

1. Suppose you wanted to tell Mrs. Roberts something without talking to her, how could you do it?

   Why would you use that?

2. What else besides (mention medium) could you use to send her a message? Anything else?

   (If not mentioned) What did Red Fox use to send a message to his father?

3. Suppose, right this minute, you wanted to make Mrs. Roberts a message that she would get when she comes to school tomorrow. What would you use for the message?

   Why would you use that?

   Could you use a drum? Why or why not?

   How about a flashlight?

4. I have some cards with some symbols on them. Can you use these cards to make a message for Mrs. Roberts that will say: "Mrs. Roberts, go to the circle?"

5. I'm going to change it. Now what does it say?

6. Here is something I want you to look at. It's a code I've made up for something.

   Do you know what it stands for?

   How can you find out what it stands for?

7. Do you remember what this stands for? (ox)

8. What's this? (A)

9. What does a letter stand for?